



Ministry of Defense
Armed Forces College of Medicine (AFCM)



MUSCULO-SKELETAL & INTEGUMENTARY SYSTEM

Study Guide

2022-2023



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Chapter 1: Curriculum at a Glance

: رؤية الكلية (College Vision)

التميز في التعليم الطبي والبحث العلمي وأن تصبح المرجع الإقليمي في العلوم الطبية العسكرية.

To achieve excellence in medical education and scientific research and to become the regional reference in military medicine.

: رسالة الكلية (College Mission)

تقدم كلية الطب بالقوات المسلحة تعليمًا وتدريبًا طبيًا عالي الجودة لتخريج ضباط أطباء وباحثين ذوي مهنية عالية ملتزمين بالتنمية المهنية المستدامة وقواعد وأخلاقيات المهنة، لتقديم خدمة وقائية وعلاجية متميزة وإجراء البحوث الصحية والطبية لدعم نظم الرعاية الصحية العسكرية والمدنية بالتعاون والشراكة الإستراتيجية مع المؤسسات ذات الصلة محلياً وإقليمياً ودولياً.

The Armed Forces College of Medicine (AFCM) provides high-quality medical education and training to graduate highly professional medical officers and researchers; committed to sustainable professional development and medical ethics, delivering high quality preventive and therapeutic health-care services and conducting health and medical research to support the military and civilian health-care systems by collaboration and strategic alliances with national, regional and international institutes.



: قيم الكلية (College Values)

1. Loyalty to Homeland.
2. Affiliation.
3. Discipline.
4. Selflessness.
5. Honesty.
6. Teamwork.
7. Creativity.
8. Quality.
9. Perfection.
10. Respect and Appreciation.

- ١ - الإخلاص للوطن
- ٢ - الإنتماء
- ٣ - الانضباط
- ٤ - إنكار الذات
- ٥ - الأمانة
- ٦ - العمل الجماعي
- ٧ - الإبداع
- ٨ - الجودة
- ٩ - الإتقان
- ١٠ - الإحترام و التقدير



AFCM Graduate Profile

A Military and Civilian Population Health Knowledge

A1 Acquire the fundamentals of basic, clinical and behavioral sciences that are essential for the care of both military and civilian population during military operations, disaster situations and in peace.

- A1.1 Describe the normal structure, development and function (the molecular, biochemical, cellular and anatomical mechanisms) of the body (as an intact organism) and of its major organ systems and the importance of these mechanisms in maintaining the body homeostasis.
- A1.2 Discuss the main developmental changes in humans and the effect of growth, development and aging on the individual and his family .
- A1.3 Describe basics of normal human behaviour and the impact of different factors altering the normal state.
- A1.4 Interpret and apply knowledge of the abnormalities of development, structure and function (Pathology and pathophysiology) of the body and its major systems, the most frequent clinical and pathologic manifestations of those conditions and the possible causes (genetic, metabolic, toxic, infectious, autoimmune, neoplastic, degenerative, behavioural and cognitive, and/or traumatic).
- A1.5 Describe drug actions: therapeutic, pharmacodynamics and pharmacokinetics, their side effects and interactions, multiple treatments, long term conditions, non-prescribed medications and the effects on the population.
- A1.6 Demonstrate basic sciences practical skills and procedures relevant to future practice, recognizing the scientific basis and interpreting common diagnostic modalities, including: imaging, electrocardiograms, laboratory assays, pathologic studies and functional assessment tests.



A2 Demonstrate medical knowledge, analytic thinking and reasoning to approach various clinical situations .

- A2.1 Apply knowledge of clinical and biomedical sciences relevant to the clinical problem at hand.
- A2.2 Use personal judgment for analytical and critical problem solving and seeking out information.
- A2.3 Demonstrate and apply the effective utilization of laboratory tests, radiologic, or office-based procedures to diagnose and/or manage common diseases and life- threatening conditions.
- A2.4 Demonstrate and apply knowledge of the therapeutic interventions (medical, surgical, physical and behavioural) available for common diseases and life-threatening conditions, including interventions for prevention, management and palliative care.
- A2.5 Apply knowledge of the epidemiology of common diseases and conditions including their predisposing personal, occupational, environmental, sexual, socioeconomic and cultural risk factors to identify systematic approaches for effective prevention and behavioural change appropriate to improve health care in both military and civilian population.

A3 Demonstrate knowledge of the unique competencies required for the practice of medicine in support of military operations and readiness to apply such knowledge.

- A3.1 Demonstrate the major developments in the history of medicine, the evolution of military medical sciences, health care management systems and economics, which lead to the contemporary military healthcare system.
- A3.2 Recognize the diagnosis, prevention and treatment of disorders associated with the unique aerospace and marine environments, with the adaptive systems designed to enhance performance and support life under such conditions.



B Health Promotion

B1 Maintain normal health, provide primary health care and deal with common health problems in the society.

- B1.1 Demonstrate the determinants of health, principles of surveillance and screening of common community health problems and diseases.
- B1.2 Define and describe a population, including its demography, cultural and socioeconomic institution, circumstances of living and health status and understand the relevance of these factors to the population's health.
- B1.3 Reason deductively in solving clinical problems :
 - a) Classify factors that place individuals at risk for disease or injury, to determine strategies for appropriate response.
 - b) Recognize, define and prioritize problems .
 - c) Interpret, analyze, and evaluate information objectively, especially when in many situations not all desired information is available, thus requiring decisions to be based on the most reasonable interpretation of the information available.
- B1.4 Discuss the role of nutrition and physical activity in health promotion.

B2 Provide healthcare services aimed at health promotion and supporting healthy, fit and ready military forces .

- B2.1 Recognize, treat, and take appropriate measures to prevent communicable diseases, conditions and injuries that have the potential to reduce military readiness or that are unique to military service.
- B2.2 Demonstrate effective skills in triage, stabilization, management, and evacuation for civilian and military emergency response and mass casualty situations, including response to weapons of mass destruction (biological, chemical, radiological, and nuclear threats).



B3 Gather essential and accurate information for the purpose of health problem identification and characterization.

B3.1 Formulate an accurate comprehensive medical history that covers all essential aspects of a patient and his/her problem.

B4 Perform full physical and mental state examination.

B4.1 Practice full physical examination and specific focused organ examination of patients with acute or chronic clinical conditions, including a mental status assessment, appropriate to the age and gender, and culturally sensitive.

B4.2 Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements.

B5 Make informed decisions to develop diagnostic and therapeutic management plans for common health problems based on patients' values and engagement, and up-to-date medical evidence.

B5.1 Integrate the results of history, physical and laboratory test findings into a meaningful diagnostic formulation .

B5.2 Formulate a treatment plan, demonstrating the ability to take action by balancing the risks and benefits of outcomes and treatment options.

B5.3 Conduct appropriate management strategies for patients with common conditions related to different age groups and genders, both acute and chronic, including medical, psychiatric and surgical conditions, and those requiring short- and long-term rehabilitation.

B5.4 Understand and utilize multidisciplinary principles and a patient-centered approach to palliative and end-of-life care.



B6 Perform clinical procedures especially those required in life saving situations.

B6.1 Perform routine clinical procedures at a level suitable to medical students and according to the clinical skill program .

B6.2 Recognize patients with immediately life threatening cardiac, pulmonary or neurological conditions regardless its etiology, apply basic and advanced life support principles, and initiate appropriate course of management for patients with serious conditions requiring critical care.

C Ethics, Professionalism and Leadership Development

C1 Be aware of the importance of a good doctor-patient relationship and follow rules of medical military and civilian health ethics.

C1.1 Compassionate treatment of patients adopting an empathic approach to them and their problems, perpetuating respect for their privacy, dignity and confidentiality

C1.2 Recognize the theories and principles that dictate ethical decision making, and the major ethical dilemmas in medicine, particularly those related to the beginning and the end of life, organ transplantation and those originated with the revolutionary development of genetics.

C1.3 Understand and support the national code of ethics, the basics of medico-legal aspects of health problems, malpractice and common medical errors issued by the Egyptian Medical Syndicate .

C1.4 Demonstrate commitment to the appropriate ethical delivery of health care in settings of armed conflicts and operations other than war, through compliance to the principles of the Geneva Conventions and the Laws of Armed Conflict as they apply to health care providers.

C1.5 Report any unprofessional or unethical behavior and physical or mental conditions related to himself, colleagues or any other person that might jeopardize patients' safety.



C2 Show compassion, respect, integrity and responsiveness to the needs of patients and society that supersedes self-interests as well as a commitment to excellence and ongoing professional development .

- C2.1 Appraise and support patients' rights and involve them and /or their caretakers in management decisions, enthusiastically putting the patients' interests over one's own interests.
- C2.2 Identify vulnerable individuals that may be suffering from abuse or neglect and take the proper actions to safeguard their welfare.

C3 Demonstrate sensitivity and responsiveness to patients' religion, culture, age, sex and disabilities.

- C3.1 Demonstrate honesty and integrity in all interactions with patients' families and colleagues, along with free acceptance of different cultural beliefs and values in the community they serve .
- C3.2 Provide special care for specific groups including pregnant women, newborns and infants, adolescents and the elderly.

C4 Collaborate with other health care professionals, including those from other disciplines to provide patient-centered care.

- C4.1 Recognize and respect the importance of other health care professionals' roles and the need to collaborate with others in caring for patient's management and promoting the health of defined populations .
- C4.2 Recognize and accept ones' own limitations of clinical skills and uncertainty of knowledge through proper counseling, consultation and referral of patients to appropriate health facility at the appropriate stage to guarantee patient's safety during medical practice.



C5 Work professionally as a health care team leader or member, or in any other military work group.

- C5.1 Display personal development and time management skills for balancing professional and personal responsibilities .
- C5.2 Apply the principles of appropriate and ethical behavior for those who are officers in military service, civil servants and physicians involved in health care systems.
- C5.3 Demonstrate competencies to operate effectively as an officer in a uniformed team or as a leader in a variety of military-medical environments.

D Interpersonal, Cross Cultural and Communication skills

D1 Communicate professionally and demonstrate respectful caring behavior when interacting with patients, families and groups.

- D1.1 Practice active listening, communicate sensitively and ethically, demonstrate honor and respectful behaviours when interacting with, counselling, and educating patients and their families, superiors, colleagues and any other member of the health profession .
- D1.2 Demonstrate compassion to the patients and their relatives in situations of stress and grief and act immediately when they suffer harm, explain treatment complications as they occur, and apologize when appropriate .
- D1.3 Describe to the patients the progress of their condition, respect their varying needs for information and explanation and encourage them to discuss the proposed treatment with their supporters.
- D1.4 Apply the principles of shared decision-making as an interpersonal and communication-based skill.



D2 Communicate effectively with different societies irrespective of culture, race, gender, socioeconomic status, literacy and religious believes.

- D2.1 Demonstrate equity and appropriate skills when interacting with individuals of different age, race, abilities, culture, sex, socio-economic status, literacy and religious practices .
- D2.2 Apply effective interpersonal and facilitative interviewing skills to efficiently provide adequate information through effective verbal, nonverbal, and/or written communications.
- D2.3 Demonstrate continuous self-awareness and calibration of one's individual reaction tendencies in reducing personal bias and achieving optimal patient centered outcomes.
- D2.4 Apply constructive feedback in evaluating his/her work and that of others.

E Health Care Systems

E1 Advocate sound quality healthcare at the Egyptian Armed Forces medical services department.

- E1.1 Apply effective skills for health care and health service support in operational deployment and emergency response, including the concepts of mobility, proximity, flexibility, conformity, and coordination .
- E1.2 Demonstrate competency in planning and execution of military contingency operations, forward combat casualty care including initial stabilization and movement from point of injury through all echelons of the military medical system, and the human performance optimization and sustainment of military personnel who train and operate in harsh, often austere, physically and mentally challenging environments.
- E1.3 Improve the health service provision by applying a process of continuous quality improvement.



E2 Coordinate with components of other health care systems in the country and globally.

- E2.1 Describe the organizational structures of the military health services and ministry of health, demonstrating the differences from one another, regarding the methods for controlling costs and allocating resources as well as the interactions between the two systems under operational conditions.
- E2.2 Demonstrate accountability to patients, society, and the profession.

E3 Understand how patient care and health professional practices affect the health care organization .

- E3.1 Advocate for access to health care, quality patient care and patient safety, and assist patients in dealing with system complexities.
- E3.2 Adopt the most suitable measures for infection control according to the setting.

E4 Practice efficient resources management and cost-effective health care without compromising quality of care.

- E4.1 Formulate and make decisions for individuals and groups, demonstrating knowledge of cost / benefit issues in health care.

F Evidence-based and lifelong learning

F1 Acquire information and make decisions based on best available evidence.

- F1.1 Retrieve, analyze, and evaluate relevant and current data from literature, using information technologies and library resources, in order to help solve a clinical problem based on evidence (EBM).



F2 Apply knowledge of research design and biostatistics to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.

- F2.1 Discuss the power of the scientific method in establishing disease causation and in demonstrating the efficacy of traditional and complementary therapies.
- F2.2 Analyze and use numerical data including the use of basic statistical methods.

F3 Demonstrate knowledge of the information resources and technology tools available to support life-long learning.

- F3.1 Apply information technology in managing medical data. Access on-line medical information and support their own education.
- F3.2 Demonstrate self-reflective abilities, to include the ability to develop and implement a plan of personal self-improvement.
- F3.3 Summarize and present to professional and lay audiences the findings of relevant research and scholarly inquiry.

F4 Engage in ethical postgraduate and research studies.

- F4.1 Demonstrate a commitment for the lifelong learning needs of the medical profession, to stay abreast of relevant scientific advances .
- F4.2 Formulate research questions that are pertinent to medicine .
- F4.3 Recognize the importance of precision in collecting, analyzing and interpreting medical and scientific data.
- F4.4 Critically appraise research studies and scientific papers in terms of integrity, reliability, validity and applicability.



Curriculum Map

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Modules and Courses along the Curriculum

Phase 1

Year	Course Title	Course Code	Total Student Effort	Credit Points	Marks
First Year	Public Health, Community & Occupational Medicine I	PH 101	90	3	60
	Clinical & Technical Skills I	CTS 102	90	3	60
	Non-technical Skills & Professionalism I	NTSP 103	120	4	80
	Research Track I	RT 104	30	1	20
	Foundation of Medical Cadet	FMC 105	120	4	80
	Foundation of Basic Medical Sciences I (Normal Structure and Function)	FBMS 106	240	8	160
	Foundations Basic Medical Sciences II (Concepts of Health & Disease)	FBMS 107	240	8	160
	Immunology & Blood	IB 110	150	5	100
	Musculo-skeletal & Integumentary System	MSI 106	300	10	200
Total 1st Year			1380	46	920



Year	Course Title	Course Code	Total Student Effort	Credit Points	Marks
Second Year	Public Health, Community & Occupational Medicine II	PH 201	90	3	60
	Clinical & Technical Skills II	CTS 202	90	3	60
	Non-technical Skills & Professionalism II	NTSP 203	120	4	80
	Research Track II	RT 204	30	1	20
	Cardio-pulmonary	CP 205	390	13	260
	Neuroscience	NS 206	390	13	260
	GIT & Metabolism	GM 207	300	10	200
	Endocrine & Genito-urinary	EGU 208	390	13	260
Total 2nd Year			1800	60	1200



Year	Course Title	Course Code	Total Student Effort	Credit Points	Marks
Third Year	Public Health, Community & Occupational Medicine III	PH 301	90	3	60
	Clinical & Technical Skills III	CTS 302	150	5	100
	Non-technical Skills & Professionalism III	NTSP 303	60	2	40
	Research Track III	RT 304	30	1	20
	Behavioral & Social Sciences	BSS 305	150	5	100
	Infectious Diseases	INF 306	390	13	260
	Aerospace Medicine	AM 307	120	4	80
	Diving Medicine	DM 308	120	4	80
	Medicine I	MED 309	135	5	100
	Surgery I	SUR 310	135	5	100
	Obstetrics /Gynecology I	OBG 311	135	5	100
	Paediatrics I	PED 312	135	5	100
	Research Capstone	RC 313	90	3	60
	Genetics	Gen 314	120	4	80
Total 3rd Year			1860	64	1280



Year	Course Title	Course Code	Total Student Effort	Credit Points	Marks
Fourth Year	Public Health, Community & Occupational Medicine IV	PH 401	90	3	60
	Clinical & Technical Skills IV	CTS 402	150	5	100
	Non-technical Skills & Professionalism IV	NTSP 403	60	2	40
	Research Track IV	RT 404	90	3	60
	Medicine II	MED 405	350	13	260
	Surgery II	SUR 406	350	13	260
	Obstetrics /Gynecology II	OBG 407	350	13	260
	Pediatrics II	PED 408	350	13	260
Total 4th Year			1790	65	1300



Year	Course Title	Course Code	Total Student Effort	Credit Points	Marks
Fifth Year	Public Health, Community & Occupational Medicine V	PH 501	90	3	60
	Clinical & Technical Skills V	CTS 502	210	7	140
	Non-technical Skills & Professionalism V	NTSP 503	60	2	40
	Research Track V	RT 504	150	5	100
	Dermatology and Venereal Diseases	DVD 505	135	5	100
	Psychiatry	PSY 506	135	5	100
	Anaesthesia & Critical Care	ANC 507	135	5	100
	Special Senses (ENT & Ophthalmology)	EO 508	135	5	100
	Oncology	ONC 509	135	5	100
	Ortho & traumatology	OT 510	135	5	100
	Toxicology Emergency Medicine & Clinical	EMT 511	135	5	100
	Forensic & Medical Ethics	FE 512	135	5	100
	Field Surgery & Medicine	FSM 513	135	5	100
	Field Surgery & Medicine Project	FSMP 514	75	3	60
	Total 5th Year		1800	65	1300



Chapter 2: Musculo-skeletal & Integumentary System

Module Description

The module is concerned with structure, function, immunology, pathology & metabolic aspects of three main domains, the first domain includes Cartilage, bones & joints, second domain includes muscles and peripheral nerves, and the third domain is skin.

Credit Points: 10

Semester: Second

Duration: 8 weeks

Total marks: 200

General Module Aims

Aim 1:

Provide the students with in-depth knowledge and skills regarding macroscopic, microscopic & biochemical structure, and pathology of cartilage, bone and joints.

Aim 2:

Provide the students with in-depth knowledge and skills regarding macroscopic & microscopic structure, function, pathology of skeletal muscles, peripheral nerves, neuromuscular junction and neuromuscular blockers.

Aim 3:

Provide the students with in-depth knowledge and skills regarding dermatomes, microscopic structure and pathology of skin.



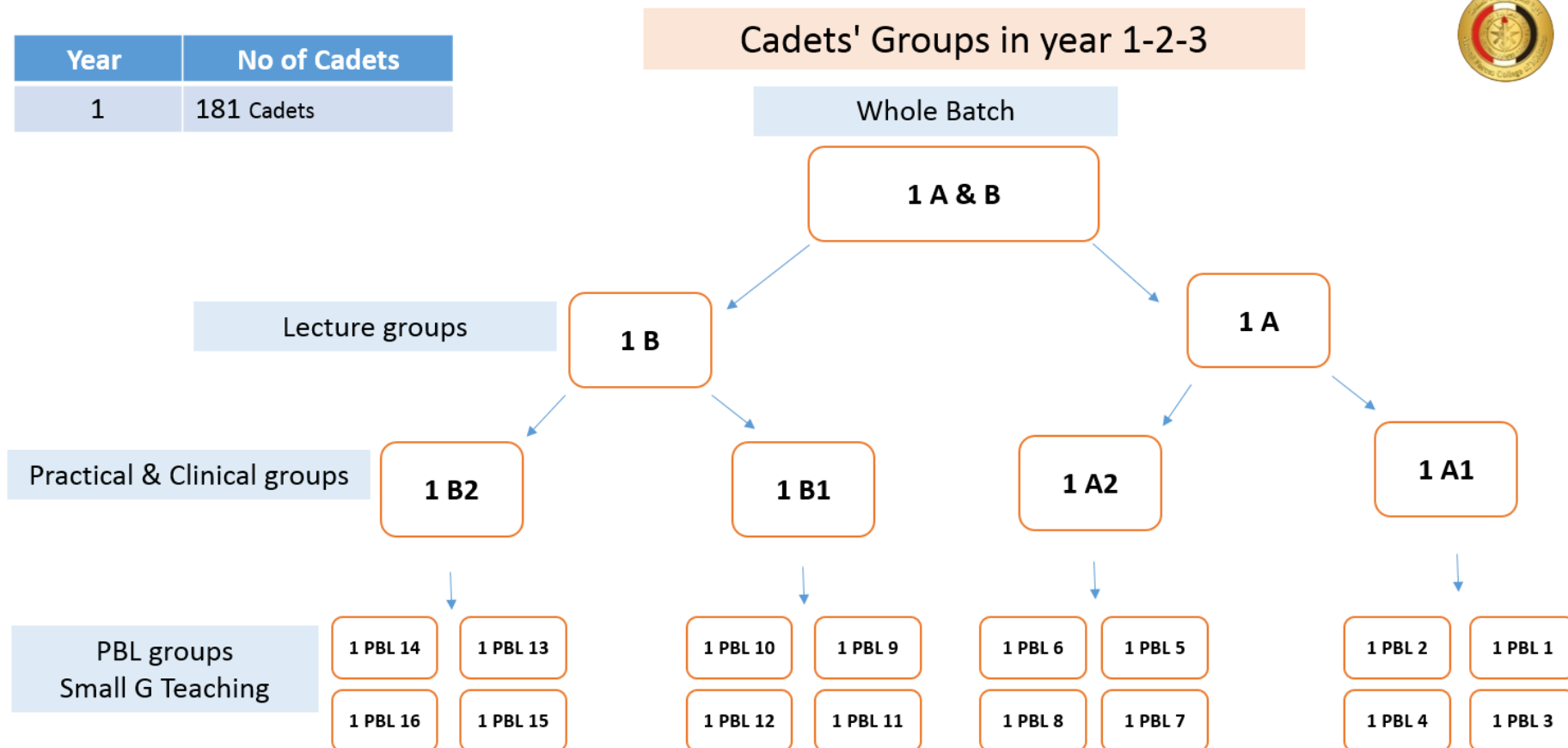
Module Goals

Having successfully completed this module, the students will be able to:

1. Describe the morphology, microscopic & biochemical structure of cartilage, bones & joints.
2. Describe Immunological basis & pathology of cartilage, bones & joints diseases.
3. Describe the morphology, development, microscopic structure & mechanism of action of skeletal muscles & neuromuscular junction.
4. Discuss the biochemical basis, pathology & pharmaco-therapeutic agents of muscle diseases.
5. Describe the dermatomes, microscopic structure of skin & pathology of related disease.



Students' Groups





Module Timetable

			Anatomy	Physiology	Bio	Histology	Pathology	Pharma	Micro	Para	Genetics	PBL	Publ. Health	Research	Clinical Skills	Computer	English	SoftSkills										
Days			Lecture 1		Lecture 2		Practical 3-4				Lecture 3		Lecture 4		Practical 5-6				Lecture 5		Lecture 6		Period 7-8					
			8.40 - 9.25		9.35 - 10.20		A1	A2	B1	B2	10.30 - 11.15		11.25 - 12.10		A1	A2	B1	B2	12.20 - 13.05		13.15 - 14.00		A1	A2	B1	B2		
			8.40 - 9.25		9.35 - 10.20		10.30 - 12.10				10.30 - 11.15		11.25 - 12.10		12.20 - 14.00				12.20 - 13.05		13.15 - 14.00		14.20 - 16.00					
Monday	12-Jun-23	A B	Orientation		Topography of upper limb		Anat 1												Cartilage		Topography of lower limb		R 1					
Tuesday	13-Jun-23	A B	Bone cells		Bone matrix & types of bones		Histo 1		Anat 1										Shoulder girdle & shoulder joint		Vitamin D & calcium				R 1			
Wednesday	14-Jun-23	A B	Introducton & osteomyelitis		Elbow , Radioulnar joints		PUB 1												Vitamin C		Purine metabolism				Comp 8			
Thursday	15-Jun-23	A B	Hyperuracemia & gout		wrist and joints of hand.		R 2		R 2										Pathology of bone tumors 1		Pathology of bone tumors 2		Comp 8					
Friday	16-Jun-23	A																										
Saturday	17-Jun-23	A B	Hip joints		Autoimmunity		Anat 2		Histo 1						PUB 2		PUB 2						Anat 2		Comp 9			
Sunday	18-Jun-23	A B	knee Joint		Tibiofibular joints, ankle joint and arches of the foot								Pathology of joint diseases		SDL		Path 1						Anat 2		Histo 1			
Monday	19-Jun-23	A B	Pectoral region		Axilla		Anat 3		PUB 3						PUB 3		Anat 3						Comp 10					
Tuesday	20-Jun-23	A B	Brachial plexus		Back & Scapular region		human itie s 1								Path 1		human itie s 1						human itie s 1		Anat 3			
Wednesday	21-Jun-23	A B	Skeletal muscle fibers 1		Skeletal muscle fibers 2		PUB 4		Anat 4										Arm and Cubital fossa.		Front of forearm		Anat 4		Comp 11			
Thursday	22-Jun-23	A B	Glycogen metabolism		Glycogen storage diseases		Bio 1								Bio 1		Anat 4						Comp 11					



* The dates at this timetable eligible for change, please check the daily timetable on the screens during your self-study time for the next day

		Anatomy	Physiology	Bio	Histology	Pathology	Pharma	Micro	Para	Genetics	PBL	Publ. Health	Research	Clinical Skills	Computer	English	Soft Skills				
1	Days																				
2																					
3																					
4		Lecture 1		Lecture 2		Practical 3-4		Lecture 3		Lecture 4		Practical 5-6		Lecture 5		Lecture 6		Period 7-8			
5		8.40 - 9.25		9.35 - 10.20		A1 A2 B1 B2		10.30 - 11.15		11.25 - 12.10		A1 A2 B1 B2		12.20 - 14.00		12.20 - 13.05		13.15 - 14.00		A1 A2 B1 B2	
6		8.40 - 9.25		9.35 - 10.20		10.30 - 12.10		10.30 - 11.15		11.25 - 12.10		12.20 - 14.00		12.20 - 13.05		13.15 - 14.00		14.20 - 16.00			
39	Friday	23-Jun-23	A																		
40																					
41	Saturday	24-Jun-23	A	Electrical excitability changes in skeletal muscle compared to nerve	Back of forearm	Anat 5								humanities 2	Anat 5						
42			B						Bio 1							humanities 2	Bio 1				
43																					
44	Sunday	25-Jun-23	A	The Hand	Nerves of the hand	PUB 4								humanities 2							
45			B						PUB 4	Anat 5						Anat 5	humanities 2				
46																					
47	Monday	26-Jun-23	A	Leave																	
48			B																		
49																					
50	Tuesday	27-Jun-23	A																		
51			B																		
52																					
53	Wednesday	28-Jun-23	A																		
54			B																		
55																					
56	Thursday	29-Jun-23	A																		
57			B																		
58	Friday	30-Jun-23																			
59																					
60																					
61	Saturday	1-Jul-23	A																		
62			B																		
63																					
64	Sunday	2-Jul-23	A																		
65			B																		
66																					
67	Monday	3-Jul-23	A			Anat 6								Anat 6							
68			B	Anat 6 Practical (B1)																	Anat 6
69																					
70	Tuesday	4-Jul-23	A																		
71			B																		
72																					
73	Wednesday	5-Jul-23	A			CS1	Anat 7							Anat 7							
74			B												CS1						Anat 7
75																					



Armed Forces College of Medicine
Musculo-skeletal & Integumentary System Study Guide

Year 1 2022-2023

* The dates at this timetable eligible for change, please check the daily timetable on the screens during your self-study time for the next day

		Anatomy	Physiology	Bio	Histology	Pathology	Pharma	Micro	Para	Genetics	PBL	Publ. Health	Research	Clinical Skills	Computer	English	Soft Skills								
Days		Lecture 1		Lecture 2		Practical 3-4		Lecture 3		Lecture 4		Practical 5-6		Lecture 5		Lecture 6		Period 7-8							
		8.40 - 9.25		9.35 - 10.20		A1	A2	B1	B2	10.30 - 11.15		11.25 - 12.10		A1	A2	B1	B2	12.20 - 14.00		12.20 - 13.05		13.15 - 14.00		14.20 - 16.00	
76	Thursday	6-Jul-23	Injury of Brachial plexus	Neuromuscular junction																					
77																									
78	Friday	7-Jul-23																							
79																									
80	Saturday	8-Jul-23	Upper limb nerve injury 1	Upper limb nerve injury 2																					
81																									
82	Sunday	9-Jul-23	Movements of upper limb	Veins of upper limb																					
83																									
84	Monday	10-Jul-23	Arterial anastomosis of upper limb	Front of thigh																					
85																									
86	Tuesday	11-Jul-23	Femoral triangle	Medial side of the thigh and Adductor canal																					
87																									
88	Wednesday	12-Jul-23	Gluteal region 1	Gluteal region 2																					
89																									
90	Thursday	13-Jul-23	Back of the thigh and popliteal fossa	Front of leg																					
91																									
92	Friday	14-Jul-23																							
93																									
94	Saturday	15-Jul-21																							
95																									
96	Sunday	16-Jul-23	Sole of the foot	Arterial anastomosis of lower limb																					
97																									
98	Monday	17-Jul-23	Veins of lower limb	Injury of nerves of lower limb																					
99																									



* The dates at this timetable eligible for change, please check the daily timetable on the screens during your self-study time for the next day.

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Summary of the Module Learning Activities

Musculo-skeletal & Integumentary System MSI 110

Course goals	Theme	Topic	SLOs	Sharing department	Teaching method
1. Describe the morphology and microscopic structure of cartilage, bones & joints.	Cartilage, bones & joints	1. Topography of upper limb.	1. Identify bones of shoulder girdle, arm, forearm & hand. 2. Identify different groups of muscles of pectoral region, back, arm, forearm & hand. 3. Enumerate nerves & vessels in the upper limb.	Anatomy	Interactive Lecture
		Bones & joints of upper limb. (Practical section 1)	1. Identify the side & general features of the clavicle, scapula, humerus, radius & ulna. 2. Enumerate bones of the hand (carpal, metacarpals & phalanges). 3. Correlate between the mentioned bones and their radiological appearance on x-ray films. 4. Identify the common sites of fracture in the above-mentioned bones. 5. Identify names, type & movement of joints.	Anatomy	Interactive Lab
		2. Cartilage.	1. Describe the microscopic structure of cartilage cells and matrix 2. Correlate the structure of hyaline cartilage, elastic cartilage and white fibro-cartilage to their function 3. Interpret the defect in the microscopic cartilage structure in different diseases		
		3. Topography of lower limb.	1. Identify bones of thigh, leg & foot. 2. Identify different groups of muscles of thigh, gluteal region, leg & foot. 3. Enumerate nerves & vessels in the lower limb.	Anatomy	Interactive Lecture
		4. Bone cells.	1. Describe the microscopic structure of the bone cells 2. Correlate the structure of bone cells to their function 3. Compare between different types of bone and cartilage cells		



			4. Interpret the defect in the microscopic structure of bone in different diseases			
		5. Bone matrix and types of bone.	<ol style="list-style-type: none"> 1. Describe the microscopic structure of bone matrix and types of ossification 2. Compare between mature and immature bone 3. Describe the microscopic structure, functions and sites of the compact bone and cancellous bone. 4. Discuss the different ways of bone growth in length and width 5. Interpret the defective microscopic bone structure in various diseases 			
		Bone & Cartilage (Practical section 1)	<ol style="list-style-type: none"> 1. Identify H&E-stained section of the compact bone using different magnifications in one minute. 2. Identify H&E-stained section of the cancellous bone using different magnifications in one minute. 3. Identify H&E-stained section of the growing end of long bone under high power magnification in one minute. 4. Label drawn diagram of the compact bone. 5. Label drawn diagram of the cancellous bone. 6. Label drawn diagram of the growing end of long bone. 7. Identify EM photo of the osteocytes. 8. Identify H&E-stained section of the hyaline cartilage using different magnifications in one minute. 9. Identify H&E stained section of the elastic cartilage using different magnifications in one minute. 	Histology	Interactive lab	
		6. Shoulder girdle & shoulder joint.	<ol style="list-style-type: none"> 1. Describe the structure of the shoulder girdle. 2. Describe the structure of the Sternoclavicular, acromioclavicular and Shoulder Joints. 3. Describe the type, articular surfaces, fibrous capsule, synovial membrane, Ligaments, relations of these joints. 4. Describe the arterial blood supply and nerve supply of these joints. 5. Describe the movements of these joints and name the 	Anatomy	Interactive Lecture	



			muscles performing these movements. 6. Name the muscles performing the movements of the Sternoclavicular, acromioclavicular and Shoulder joints.		
		7. Vitamin D & calcium.	1. Illustrate steps of vitamin D synthesis & activation. 2. Discuss mechanism of action of vitamin D and its role of calcium hemostasis. 3. Correlate vitamin D deficiency to clinical disorders.	Biochemistry	Interactive lecture
		8. Introduction & osteomyelitis.	1. Explain repair of bone fractures and causes of imperfect bone healing 2. Define osteomyelitis. 3. Discuss the pathology of acute hematogenous osteomyelitis. 4. Enumerate complications of acute hematogenous osteomyelitis.	Pathology	Interactive lecture
		9. Elbow, Radioulnar joints.	1. Describe type, articular surfaces, fibrous capsule, synovial membrane, ligaments, movements, arterial and nerve supply of elbow joint. 2. Describe type, articular surfaces, ligaments and movements of radioulnar joints.	Anatomy	Interactive Lecture
		10. Vitamin C.	1. Discuss mechanism of action of vitamin C and its role of collagen synthesis. 2. Correlate clinical disorders to vitamin C deficiency.	Biochemistry	Interactive lecture
		11. Purine metabolism.	1. Illustrate steps of purine synthesis. 2. Demonstrate regulation of purine metabolism. 3. Explain biochemical basis of some related drugs.	Biochemistry	Interactive lecture
		12. Hyperuricemia & gout.	1. Illustrate steps of purine catabolism. 2. Demonstrate causes of hyperuricemia. 3. Interpret biochemical basis of gout and its treatment. Correlate purine metabolism with immune diseases.	Biochemistry	Interactive lecture
		13. Wrist and joints of hand.	1. Describe type, articular surfaces, fibrous capsule, synovial membrane, ligaments and movements, arterial and nerve supply of wrist joint. 2. Identify type and movements of small joints of hand.	Anatomy	Interactive Lecture
		14. Pathology of bone tumors (1).	1. Classify bone tumors & enumerate them. 2. Enumerate benign bone tumors 3. Discuss pathology of compact osteoma & osteoid osteoma 4. Describe pathology of benign cartilage forming tumors	Pathology	Interactive lecture



			<ol style="list-style-type: none"> Describe the pathology of giant cell tumor of bone. Mention the radiologic findings of giant cell tumor of bone Analyze the clinico-pathologic features of osteosarcoma 		
		15. Pathology of bone tumors (2).	<ol style="list-style-type: none"> Analyze the clinico-pathologic features of chondrosarcoma. Analyze the clinico-pathologic features of Ewing's sarcoma. Recognize basic facts related to bone metastasis. List causes of pathological fractures. Define osteodystrophy & list its causes. Discuss pathology of fibrous dysplasia. Mention etiology, and pathogenesis of Paget's disease of bone. List complications of Paget's disease of bone 	Pathology	Interactive lecture
		16. Hip Joint.	<ol style="list-style-type: none"> Mention the type of the hip joint. Describe the capsule & ligaments of the hip joint. Describe the important relations of the hip joint & the related applied anatomy. Explain the factors stabilizing the hip joint. Mention the nerves & vessels supplying the hip joint. List movements of hip joint & the muscle groups producing them. 	Anatomy	Interactive Lecture
		Bones & joints of lower limb. (Practical section 2)	<ol style="list-style-type: none"> Identify the side and the general features of the hip bone, femur, tibia and the fibula. Enumerate bones of the foot (tarsal, metatarsals and phalanges). Correlate between the four mentioned bones and their radiological appearance on x-ray films. Identify the common sites of fracture in the femur. Identify names, type & movement of joints. 	Anatomy	Interactive Lab
		17. Autoimmunity.	<ol style="list-style-type: none"> Recognize self-tolerance. Discuss aetiology of autoimmunity. Outline spectrum of autoimmune diseases. Outline management of autoimmune diseases. 	Microbiology	Interactive lecture
		18. knee Joint.	<ol style="list-style-type: none"> Mention the type of knee joint. Identify the articulating surfaces. Describe joint capsule, ligaments, menisci, synovial membrane & correlate their clinical significance. 	Anatomy	Interactive Lecture



			<ol style="list-style-type: none"> Mention movements of the knee joint & predict muscle groups producing them. List nerves & vessels supplying knee joint. Describe factors stabilizing the knee joint. 		
		19. Tibio-fibular joints, ankle joint and arches of the foot.	<ol style="list-style-type: none"> Describe type, articular surfaces, fibrous capsule, ligaments, movements, arterial and nerve supply of tibiofibular joints Describe type, articular surfaces, fibrous capsule, synovial membrane, ligaments, movements, arterial and nerve supply of ankle joint Enumerate types, bones forming, factors supporting arches of foot. Describe functions of arches of the foot and its clinical applications 	Anatomy	Interactive Lecture
		20. Pathology of joint diseases.	<ol style="list-style-type: none"> List types and causes of arthritis. Discuss pathology of acute suppurative arthritis Mention the pathogenesis of rheumatoid arthritis Describe articular lesions of rheumatoid arthritis. List extra-articular lesions of rheumatoid arthritis. List causes of osteoarthritis Explain pathology of osteoarthritis. Mention etiology of gouty arthritis. Describe the pathology of gouty arthritis 	Pathology	Interactive lecture
		Bone tumors & case discussion (Practical section 1)	<ol style="list-style-type: none"> Describe the gross picture of locally malignant and malignant bone tumours & identify them. Describe the microscopic picture of locally malignant bone tumours & identify them. Analyze the findings of the clinical case. Correlate between clinical diagnosis and histopathological diagnosis. Understand how to reach to the final diagnosis. 	Pathology	Interactive lab
2. Describe the morphology, development, microscopic structure & mechanism of	Muscles & neuromuscular junction & peripheral nerves	21. Pectoral region.	<ol style="list-style-type: none"> Identify the attachments of the axillary fascia. Identify attachments and structures piercing clavipectoral fascia. Describe attachment, action and nerve supply of muscles of the pectoral region; pectoralis major, pectoralis minor, subclavius and serratus anterior. 	Anatomy	Interactive Lecture



action of skeletal muscles & neuromuscular junction.		22. Axilla.	<ol style="list-style-type: none"> 1. Define the axilla 2. Describe its boundaries 3. Enumerate its contents 4. Give a note on related applied anatomy 5. Describe the origin, termination & branches of axillary artery. 6. Describe the origin, tributaries & termination of axillary vein. 	Anatomy	Interactive Lecture
		Pectoral & Axilla (Practical section 3)	<ol style="list-style-type: none"> 1. Identify muscles in pectoral region. Pectoralis major, Pectoralis minor, Subclavius and Serratus anterior). 2. Identify the origin and insertion of the previous muscles. 3. Demonstrate the action of the previous muscles. 4. Identify boundaries of axilla. 5. Identify contents of the axilla: <ul style="list-style-type: none"> • Axillary artery: parts and branches. • Axillary vein. • Brachial plexus: stages and branches. 6. Axillary lymph nodes on a diagram. 	Anatomy	Interactive Lab
		23. Brachial plexus	<ol style="list-style-type: none"> 1. Explain the formation, stages and branches of the brachial plexus 	Anatomy	Interactive Lecture
		24. Back & Scapular region	<ol style="list-style-type: none"> 1. Describe attachment, action and nerve supply of muscles of back; latissimus dorsi, trapezius, levator scapulae and rhomboids 2. Describe attachment, action and nerve supply of scapular muscles; deltoid, supraspinatus, infraspinatus, subscapularis, teres minor and teres major 3. Identify the rotator cuff muscles and their clinical significance 4. Describe boundaries and contents of intermuscular spaces in scapular region 2. Describe root value, course, main relations and branches of axillary and suprascapular nerves 	Anatomy	Interactive Lecture
		25. Histology of skeletal muscle fibers (1).	<ol style="list-style-type: none"> 1. Describe the microscopic structure of skeletal muscle fibers. 2. Correlate the microscopic structure of the skeletal muscle fibers to their function 	Histology	Interactive Lecture



		26. Histology of skeletal muscle fibers (2).	<ol style="list-style-type: none"> 1. Compare between different types of muscle fibers (red/white /intermediate) 2. Discuss the different ways of growth and regeneration of skeletal muscle fibers 3. Correlate the microscopic structure of skeletal muscle fibers and receptors and effectors to their functions. 4. Interpret the defective microscopic structure of the skeletal muscle in different diseases. 	Histology	Interactive Lecture
		Back & Scapular region (Practical section 4)	<ol style="list-style-type: none"> 1. Identify muscles of back. 2. (Trapezius, Latissimus dorsi, Levator scapulae, Rhomboidus major and minor). 3. Identify muscles of scapular region and shoulder. 4. (Deltoid, Supraspinatus, Infraspinatus, Teres major, Teres minor, Subscapularis). 5. Identify the origin and insertion of the previous muscles. 6. Demonstrate the action of the previous muscles. 	Anatomy	Interactive Lab
		27. Arm and Cubital fossa.	<ol style="list-style-type: none"> 1. Describe the attachment, action and nerve supply of muscles of the front and back of arm; coracobrachialis, biceps, brachialis and triceps. 2. Describe root value, course, main relations and branches of musculocutaneous, ulnar, median and radial nerves in arm. 3. Define beginning, termination, course and main branches of brachial artery 4. List boundaries, roof, floor and contents of cubital fossa 	Anatomy	Interactive Lecture
		28. Front of forearm	<ol style="list-style-type: none"> 1. Describe the attachment, action and nerve supply of muscles of the front of forearm (superficial and deep) 2. Describe the course, relations and branches of ulnar and median nerves in the forearm 3. Describe the course, termination and branches of radial and ulnar arteries in the forearm 	Anatomy	Interactive Lecture
		29. Glycogen metabolism	<ol style="list-style-type: none"> 1. Illustrate the steps of glycogenesis and glycogenolysis. 2. Demonstrate fate of glycogen in liver and muscle. 3. Compare between liver and muscle glycogen. 	Biochemistry	Interactive lecture
		30. Glycogen storage diseases	<ol style="list-style-type: none"> 1. Explain the regulation of glycogenesis and glycogenolysis 2. Interpret biochemical basis of glycogen storage diseases. 	Biochemistry	Interactive lecture



		Applied Biochemistry (Practical section)	Correlate clinical cases of musculoskeletal system to their biochemical basis.	Biochemistry	Interactive lab
		31. Back of forearm	<ol style="list-style-type: none"> Describe the attachment, action and nerve supply of muscles of the back of forearm; superficial and deep. Describe the origin, course, and branches of posterior interosseous nerve. 	Anatomy	Interactive Lecture
		Arm & Cubital fossa (Practical section 5)	<ol style="list-style-type: none"> Identify muscles of anterior compartment of the arm (Biceps, Brachialis & Coracobrachialis). Identify muscle of posterior compartment of the arm (Triceps). Identify the origin & insertion of the previous muscle. Demonstrate the action of these muscles. Identify Musculocutaneous, ulnar, median nerve in the arm. Identify radial nerve in the back of arm. Identify Brachial artery and profunda brachii. Trace the boundaries of the cubital fossa. Identify the contents of the cubital fossa. 	Anatomy	Interactive Lab
		32. The Hand	<ol style="list-style-type: none"> Define attachments, structures passing superficial and deep to flexor & extensor retinaculum Identify fibrous flexor sheaths List the attachments and function of palmar aponeurosis Enumerate contents of facial compartments of palm Enumerate boundaries, floor and contents of anatomical snuff box. Identify muscles of the hand & their nerve supply 	Anatomy	Interactive Lecture
		33. Nerves of the hand	<ol style="list-style-type: none"> Describe course, main relations and distribution of ulnar, median and radial nerves in hand. State the course and branches of radial and ulnar arteries in hand. 	Anatomy	Interactive Lecture
		Front of forearm (Practical section 6)	<ol style="list-style-type: none"> Identify the superficial and deep muscles of the front of the forearm. Identify the origin and insertion of the previous muscles. Demonstrate the action of the previous muscles. Identify the median, anterior interosseous, ulnar & radial nerves in the front of forearm. Identify ulnar & radial arteries. 	Anatomy	Interactive Lab



			6. Identify the flexor retinaculum.		
		34. Electrical excitability changes in skeletal muscle compared to nerve.	<ol style="list-style-type: none"> Describe with illustration the skeletal muscle electric response (action potential). Describe the skeletal muscle mechanical response (simple muscle twitch). Explain the excitability changes of the skeletal muscle during action potential. Define motor unite, motor neuron pool and motor unite recruitment. Define all or none-law and identify which tissues that obey to that law and which not. 	Physiology	Interactive lecture
		Back of forearm & hand and dorsum of the hand (Practical section 7)	<ol style="list-style-type: none"> Identify the superficial and deep muscles of the back of the forearm. Identify the origin and insertion of the extensors of forearm. Demonstrate the action of the previous muscles. Identify posterior interosseous nerve. Demonstrate the boundaries, roof and contents of anatomical snuff box. Identify the extensor retinaculum and its compartments on back of radius and ulna. Identify palmar aponeurosis and muscles of the hand. 	Anatomy	Interactive Lab
		35. Injury of Brachial plexus	<ol style="list-style-type: none"> Summarize the branches of the brachial plexus Describe the causes, muscles affected and deformity resulting from injury of: <ul style="list-style-type: none"> Whole brachial plexus Upper trunk of brachial plexus Lower trunk of brachial plexus. Discuss the causes and effect of injury of long thoracic nerve 	Anatomy	Interactive Lecture
		36. Neuromuscular junction	<ol style="list-style-type: none"> Describe the physiological anatomy of the neuromuscular junction. Explain the mechanism of neuromuscular transmission. Describe the properties of neuromuscular transmission. Explain the pathophysiology of Myasthenia gravis. 	Physiology	Interactive lecture
		37. Neuromuscular blockers	<ol style="list-style-type: none"> Differentiate between competitive and depolarizing neuromuscular blockers regarding mechanism of action and adverse effects. 	Pharmacology	Interactive lecture



			2. Identify the reversal of neuro-muscular blockers.		
		38. Molecular basis of muscular contraction and excitation coupling mechanism	<ol style="list-style-type: none"> Describe skeletal muscle structure–function relationships. Summarize the excitation-contraction coupling. Recognize the mechanism of cross bridge cycle Interpret the role of cytosolic calcium in muscle contraction and relaxation. 	Physiology	Interactive Lecture
		39. Upper limb injuries (1)	<ol style="list-style-type: none"> Describe the distribution of musculocutaneous, ulnar & median nerves. Discuss the effects of injury of these nerves. Predict the resulting deformity from these nerves' injuries. 	Anatomy	Interactive Lecture
		40. Upper limb injuries (2)	<ol style="list-style-type: none"> Describe the distribution of axillary and radial nerves. Discuss the effects of injury of these two nerves. Predict the deformity resulting from injury of these two nerves. 	Anatomy	Interactive Lecture
		41. Factors affecting skeletal muscle contraction	<ol style="list-style-type: none"> Differentiate between isotonic and isometric contraction Explain effect of muscle fiber type on simple muscle twitch and compare white versus red muscle Explain effect of Muscle fiber length (Pre-load) on simple muscle twitch Interpret scenarios on length-tension curves (passive and active tension) Explain the bell-shaped active tension curve Explain effect of afterload on simple muscle twitch and use knowledge of relationship between velocity and load Explain effect of repeated stimulation, Fatigue and temperature change on simple muscle twitch. 	Physiology	Interactive Lecture
		42. Skeletal muscle metabolism	<ol style="list-style-type: none"> Identify different energy sources supplied to the muscle Describe the importance of each energy source system Define the oxygen debt Identify the types and the importance of oxygen debt Identify causes of muscle fatigue. Identify muscle mechanical efficiency and thermal changes during contraction. 	Physiology	Interactive Lecture



		43. Movements of upper limb	<ol style="list-style-type: none"> 1. List movements of shoulder girdle, shoulder joint, elbow, radioulnar, wrist & hand joints. 2. Predict muscles producing the movements of the above-mentioned joints. 3. Describe clinical applications of movements of joints of the upper limb. 	Anatomy	Interactive Lecture
		44. Veins of upper limb	<ol style="list-style-type: none"> 1. Describe beginning, termination, course and tributaries of superficial and deep veins of upper limb. 2. Predict clinical significance of veins of upper limb 	Anatomy	Interactive Lecture
		45. Physiology of the smooth muscle	<ol style="list-style-type: none"> 1. Describe how calcium activation of myosin cross bridge in smooth muscle 2. Compare the role of calcium in bringing about contraction in smooth muscle & skeletal muscle 3. Describe the functional types of the smooth muscle 4. Describe the smooth muscle action potential. 5. List the properties of smooth muscle contraction 	Physiology	Interactive Lecture
		46. Pathology of muscle and soft tissue	<ol style="list-style-type: none"> 1. Identify common hereditary bone lesions. 2. Understand basic facts related to inflammatory myopathies. 3. Identify the pathogenesis of myasthenia gravis. 4. List types of muscular dystrophy 5. Classify soft tissue tumors 6. Describe pathology of Lipoma and fibroma 7. Discuss pathology of haemangioma and lymphangioma 	Pathology	Interactive Lecture
		47. Arterial anastomosis of upper limb	<ol style="list-style-type: none"> 1. Discuss the arteries sharing in anastomosis around scapula, humerus, elbow & wrist 2. Predict the clinical significance of anastomosis of upper limb. 	Anatomy	Interactive Lecture
		48. Front of thigh	<ol style="list-style-type: none"> 1. Describe the attachments and contents of superficial fascia of thigh 2. Describe attachment of deep fascia 3. Define site, shape, and structures piercing saphenous opening 4. Describe attachment, muscle inserted and functions of iliotibial tract 5. Describe attachment, action and nerve supply of muscles of the front of thigh. 	Anatomy	Interactive Lecture



		49. Myasthenia Gravis	<ol style="list-style-type: none"> 1. Classify the drugs used in treatment of myasthenia gravis. 2. Explain the mechanism of action and adverse effects of drugs used in treatment of myasthenia gravis 	Pharmacology	Interactive Lecture
		50. Femoral triangle	<ol style="list-style-type: none"> 1. Enumerate boundaries and contents of femoral triangle 2. Describe the boundaries, contents and function of femoral sheath 3. Describe the site, diameter, function and surgical significance of femoral canal 4. Define femoral hernia and its direction 5. Describe root value, origin, course and branches of femoral nerve 6. Describe beginning, course, termination and branches of femoral artery 7. Describe beginning, course, termination and tributaries of femoral vein 	Anatomy	Interactive Lecture
		51. Medial side of the thigh and Adductor canal	<ol style="list-style-type: none"> 1. Describe the attachments, action and nerve supply of muscles of the medial side of thigh (adductors & gracilis) 2. Describe root value, origin, course and branches of obturator nerve 3. Enumerate boundaries and contents of adductor canal 	Anatomy	Interactive Lecture
		Thigh front & medial (Practical section 8)	<ol style="list-style-type: none"> 1. Identify muscles of front of thigh (quadriceps femoris, sartorius, tensor fascia lata). 2. Identify origin and insertion of the previous muscles. 3. Demonstrate the action of the previous muscles. 4. Trace the boundaries of the femoral triangle. 5. Identify the structures forming the roof and floor of femoral triangle. 6. Follow the course of the femoral vessels and femoral nerve in the femoral triangle and identify their major branches/tributaries. 7. Identify muscles of adductor compartment of thigh (pectineus, adductor longus, adductor brevis, adductor magnus, gracilis). 8. Identify the origin and insertion of previous muscles. 	Anatomy	Interactive Lab



			9. Demonstrate the action of the previous muscles. 10. Identify the obturator nerve. 11. Identify the boundaries and contents of the adductor canal.		
		EMG (Practical section)	1. Identify the different parts of biopack machine. 2. Mention the steps of experiments. 3. Identify the physiological basis of muscle recruitment and fatigue. 4. Analyze the recorded graphs.	Physiology	Interactive lab
		52. Gluteal region (1)	1. Define the gluteal region. 2. Enumerate the cutaneous nerve supply of the four quadrants of this region. 3. Describe the attachments, nerve supply and action of the three glutei & tensor fasciae latae. 4. Describe the important role of glutei medius & minimus during walking. 5. Comment on the effect of unilateral or bilateral paralysis of glutei medius and minimus. 6. Demonstrate the safe site for giving IM injection in the gluteal region	Anatomy	Interactive Lecture
		53. Gluteal region (2)	1. Identify the greater and lesser sciatic foramina with the sacrotuberous & sacrospinous ligaments. 2. List the six lateral rotators of the hip. 3. Describe the attachments, nerve supply and action of the 6 lateral rotators of the hip. 4. List the structures passing above & below piriformis. 5. Enumerate the nerves of the gluteal region with their distribution. 6. List arteries of the gluteal region with important sites of arterial anastomosis.	Anatomy	Interactive Lecture
		54. Back of the thigh and popliteal fossa	1. Describe the attachments, action and nerve supply of muscles of back of thigh 2. Enumerate boundaries and contents of popliteal fossa 3. Describe root value, origin, course and branches of tibial and common peroneal nerve 4. State beginning, course and branches of popliteal artery	Anatomy	Interactive Lecture



			5. State beginning, course and termination of popliteal vein.		
		55. Front of leg	<ol style="list-style-type: none"> 1. Describe the attachments, action and nerve supply of muscles of front of leg 2. Define attachment and structures passing behind extensor retinacula 3. Describe root value, origin, course and branches of anterior tibial (deep peroneal) nerve 4. State beginning, course and branches of anterior tibial artery 	Anatomy	Interactive Lecture
		Gluteal region (Practical section 9)	<ol style="list-style-type: none"> 1. Identify gluteal muscles (gluteus maximus, medius and minimus). 2. Identify the origin and insertion of previous muscles. 3. Demonstrate the action of the previous muscles. 4. Identify superior and inferior gluteal nerves and vessels. 5. Identify lateral rotators of hip joint (piriformis, obturator internus, obturator externus, superior and inferior gemelli and quadratus femoris). 6. Identify origin and insertion of previous muscles. 7. Demonstrate the action of the previous muscles. 8. Identify the structures passing through the greater and lesser sciatic foramina. 	Anatomy	Interactive Lab
		56. Lateral side of leg and dorsum of foot	<ol style="list-style-type: none"> 1. Describe the attachments, action and nerve supply of muscles of lateral side of leg and dorsum of foot 2. Define attachment and structures passing behind peroneal retinacula 3. Describe root value, origin, course and branches of superficial peroneal nerve 4. State beginning, course and branches of dorsalis pedis artery & its clinical significance 	Anatomy	Interactive Lecture
		57. Posterior compartment of leg	<ol style="list-style-type: none"> 1. Define attachment and structures passing behind flexor retinaculum 2. Describe the attachment, action and nerve supply of muscles of back leg; superficial and deep 3. Describe root value origin, course and branches of posterior tibial nerve 4. State beginning, course and branches of posterior tibial 	Anatomy	Interactive Lecture



			artery		
		58. keratinocytes	<ol style="list-style-type: none"> Describe the microscopic structure of keratinocytes. Correlate the microscopic structure of the keratinocytes to their function. Correlate the microscopic structure of the non-keratinocytes to their functions. 	Histology	Interactive Lecture
		59. Non-Keratinocytes & Dermis	<ol style="list-style-type: none"> Correlate the microscopic structure of melanocytes to their function Describe the microscopic structure of the dermis. Compare between the microscopic structure of different skin types and types of sweat glands Interpret the defective skin microscopic structure in different diseases. 	Histology	Interactive Lecture
		60. Sole of the foot	<ol style="list-style-type: none"> Enumerate contents of the four layers of foot Describe action and nerve supply of muscles of foot Describe the origin, course and distribution of medial and planter nerves Identify the distribution of medial and planter arteries 	Anatomy	Interactive Lecture
		61. Arterial anastomosis of lower limb	<ol style="list-style-type: none"> Discuss the arteries sharing in anastomosis around trochantric, cruciate, back of thigh, knee and ankle. Predict the clinical significance of anastomosis of lower limb 	Anatomy	Interactive lecture
		Skeletal muscle & skin (Practical section 2)	<ol style="list-style-type: none"> Recognize H&E stained T.S. section of the skeletal muscles using different magnifications in one minute. Recognize iron hematoxylin-stained section of the myofibrils under high power magnification in one minute. Recognize H&E-stained section of the muscle spindle under high power magnification in one minute. Recognize gold chloride-stained section of the motor end plate under high power magnification in one minute. Label drawn diagram of the skeletal muscles T.S. Recognize EM photo of the skeletal muscle sarcomere. Recognize H&E-stained section of the thick skin using different magnifications in one minute. Recognize H&E-stained section of the thin skin using different magnifications in one minute. Label drawn diagram of the thick skin. Label drawn diagram of the thin skin. 	Histology	Interactive lab



		Back of thigh & popliteal fossa (Practical section 10)	<ol style="list-style-type: none"> 1. Identify muscles of flexor compartment of thigh (semimembranosus, semitendinosus and biceps femoris). 2. Identify the origin and insertion of the previous muscles. 3. Demonstrate the actions of the previous muscles. 4. Trace the boundaries of the popliteal fossa. 5. Identify the structures forming the roof and floor of popliteal fossa. 6. Identify the contents of the popliteal fossa with emphasis on their arrangement. 7. Follow the course, distribution & divisions of the sciatic nerve in the back of the thigh. 	Anatomy	Interactive Lab
		62. Veins of lower limb	<ol style="list-style-type: none"> 1. Describe beginning, termination, course and tributaries of superficial and deep veins of lower limb. 2. Predict clinical significance of veins of lower limb 	Anatomy	Interactive lecture
		63. Injury of nerves of lower limb	<ol style="list-style-type: none"> 1. Recognize causes of femoral and gluteal nerve injury. 2. Predict the sensory and motor defects following femoral and gluteal nerve injury. 3. Recognize causes of sciatic, tibial and common peroneal nerve injury. 3. Predict the sensory and motor defects following sciatic, tibial and common peroneal nerve injury. 	Anatomy	Interactive Lecture
		64. Movements of lower limb	<ol style="list-style-type: none"> 1. List movements of hip, knee, tibiofibular and ankle joints. 2. Predict muscles producing the movements of the above-mentioned joints. 3. Describe clinical applications of movements of joints of the lower limb. 	Anatomy	Interactive Lecture
		65. Body weight transmission & mechanism of walking	<ol style="list-style-type: none"> 1. Describe the mechanism of body weight transmission at different joints. 2. Identify the phases of gait cycle. 3. Interpret the anatomical data to explain the factors controlling each phase of gait cycle. 	Anatomy	Interactive Lecture
		The leg (front & lateral) (Practical section 11)	<ol style="list-style-type: none"> 1. Identify muscles of anterior compartment of leg (Tibialis anterior, extensor hallucis longus, extensor digitorum longus, peroneus tertius). 	Anatomy	Interactive Lab



			<ol style="list-style-type: none"> Identify the origin and insertion of the previous muscles. Demonstrate the action of the previous muscles. Locate the course and distribution of the anterior tibial vessels and nerve. Identify the 2 extensor retinacula and the structure passing beneath them. Identify structures on the dorsum of the foot (extensor digitorum brevis, dorsalis pedis artery). Identify muscles of lateral compartment of leg (peroneus longus, peroneus brevis). Identify the origin and insertion of the previous muscles. Demonstrate the action of the previous muscles. Locate the course and distribution of the superficial peroneal nerve. 		
		66. Pathology of non-neoplastic skin disorders	<ol style="list-style-type: none"> Define gross and microscopic terms applied in skin pathology. Identify classification of skin disorders. Discuss the pathology of non-neoplastic skin lesions. Analyze the given clinical and laboratory findings to reach diagnosis of pathological conditions related to non-neoplastic skin lesions 	Pathology	Interactive Lecture
		67. Pathology of neoplastic skin lesions	<ol style="list-style-type: none"> Classify neoplastic skin disorders into benign, locally aggressive and malignant. Describe pathology of neoplastic skin lesions Compare between squamous cell carcinoma and basal cell carcinoma List examples for adnexal skin tumors. Analyse the given clinical and laboratory findings to reach diagnosis of pathological conditions related to neoplastic skin lesions 	Pathology	Interactive Lecture
		68. Development of musculoskeletal system	<ol style="list-style-type: none"> Describe the onset and stages of limb development. Predict the congenital anomalies of limbs and their possible causes. 	Anatomy	Interactive Lecture



		69. Pathology of melanocytic skin disorders	<ol style="list-style-type: none"> 1. Classify types of melanocytic lesions. 2. Discuss the pathology of nevi and their types. 3. Discuss the pathology of malignant melanoma. 4. Compare the gross and microscopic features of benign and malignant melanocytic tumors. 	Pathology	Interactive Lecture
		Pathology of skin (Practical section 2)	<ol style="list-style-type: none"> 1. Describe the gross picture of locally aggressive and malignant skin tumors & identify them. 2. Describe the microscopic picture of benign, locally aggressive and malignant skin tumors & identify them. 3. Analyze the findings of the clinical case. 4. Correlate between clinical diagnosis and histopathological diagnosis. 5. Understand how to reach to the final diagnosis. 	Pathology	Interactive lab
1- Describe the dermatomes, microscopic structure of skin with the immunological basis & pathology of related diseases.	Skin	70. Dermatomes & cutaneous nerves of upper limb	<ol style="list-style-type: none"> 1. Identify dermatomes of shoulder, arm, forearm and hand and their clinical significance. 2. Enumerate cutaneous nerves supplying shoulder, arm & forearm. 	Anatomy	Interactive Lecture
		71. Dermatomes & cutaneous nerves of lower limb	<ol style="list-style-type: none"> 1. Identify the dermatomes of thigh, gluteal region, leg and foot and their clinical significance. 2. Enumerate cutaneous nerves supplying thigh, gluteal region, leg & foot. 	Anatomy	Interactive Lecture
		Back of leg & anomalies of limb (Practical section 12)	<ol style="list-style-type: none"> 1. Identify superficial group of muscles of back of leg (gastrocnemius, soleus, plantaris). 2. Identify deep group of muscles of back of leg (popliteus, flexor digitorum longus, flexor hallucis longus, tibialis posterior). 3. Identify origin and insertion of the previous muscles. 4. Demonstrate the action of the previous muscles. 5. Locate the course and distribution of posterior tibial vessels and tibial nerve. 6. Identify the flexor retinaculum and structures deep to it. 7. Identify the planter aponeurosis and the layers of the sole of foot (third and fourth on diagrams only) 8. Identify anomalies of limbs on diagrams. 	Anatomy	Interactive Lab



Other parallel courses during the module period

1. Clinical & Technical Skills I CTS 102

CS1	<ul style="list-style-type: none">Examination of upper limb.
CS2	<ul style="list-style-type: none">Examination of lower limb.
CS3	<ul style="list-style-type: none">Radiological anatomy of upper and lower limbs.

2. Public Health, Community & Occupational Medicine I PH 101

Sharing department	No	TUTORIAL TOPIC	ILOs
Public health	1	Study designs (5): Clinical Trials-A	<ol style="list-style-type: none">Describe the key features & uses of interventional studies.Describe different types of clinical trials.Identify randomization, and blinding in clinical trials.Identify advantages & limitations of clinical trials.
		Study designs (5): Clinical Trials-B	<ol style="list-style-type: none">Draw a flow chart describing the design/steps of clinical trials.Describe different designs used in clinical trials.Distinguish different types of analysis in clinical trials.Delineate interim analysis; when to stop clinical trial.Identify outcomes/endpoints of clinical trials.
	2	Populations & Samples	<ol style="list-style-type: none">Define sampling.Recognize the need of sampling in research.Distinguish between different sampling techniques.Identify determinants of sample size.
	3	Qualitative Research - Overview	<ol style="list-style-type: none">Define qualitative research.Determine key features & uses of qualitative research designs.Compare between quantitative & qualitative research.



		Data Collection Tools	<ol style="list-style-type: none"> 1. Identify different data collection tools. 2. Recognize advantages & disadvantages of data collection tools. 3. Distinguish various pitfalls in questionnaire design.
	4	Practical Applications	<ol style="list-style-type: none"> 1. Calculate and interpret the risk measures (RR & AR). 2. Calculate and interpret the Number Needed to Treat (NNT). 3. Choose suitable sampling techniques based on different research questions and scenarios. 4. Distinguish various pitfalls in questionnaire design. 5. Answer applied exercises on research methodology.

3. Research Track I RT 104

Topic	ILOs	Method of teaching
Data Open Sources	<p><i>By the end of this lecture and hands-on practice students will be able to:</i></p> <ol style="list-style-type: none"> 1. Identify the available resources for open data and requirement for their access and usage. 2. Apply skills of data extraction and importing through employing online platforms for data analysis and visualization. 3. Appreciate the open data sources for secondary analysis and research purposes. 	Interactive lecture, in-class activities, using online available data open sources.



Chapter 3: Learning Strategies

In the Musculoskeletal & integumentary module, the students will be enriched with a spectrum of different learning strategies that enhances their learning experience. These strategies include:

Interactive lectures:

- Interactive lectures are the main teaching strategy in this module. They go beyond the traditional boundaries of the lecture format through increasing engagement and introduction of active learning methods. Thus, transforming the students from being passive listeners to active contributors. In lectures, an efficient and organized delivery of a large body of knowledge will be presented in a simplified manner to the students' level of understanding.

Amin Z and Eng K H (2003). Making Lecture Effective. In: Basics in Medical Education. 1st Edition. World Scientific Publishing Co. Pte. Ltd. ISBN-13 978-981-238-209-2.

Tutorial teaching (incorporated in the practical classes)

- Tutorial is a student-centered learning strategy, which provides an opportunity for students to ask questions, express points of view and generally interact and relate with the tutor and other students through discussion. The core of the tutorial teaching process lies in the interplay between the student's and the tutor's conceptions of learning.

Graham Webb (1983). The Tutorial Method, Learning Strategies and Student Participation in Tutorials: Some Problems and Suggested Solutions, Innovations in Education & Training International, 20:2, 117-121, DOI: 10.1080/0033039830200204

Self-Directed learning (SDL):



- It is an active engagement learning process, in which students take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. SDL is the cornerstone for students to achieve the ultimate goal of being continuous life-long learners and possessing the capacity of future professional growth.

Saks K and Leijen A (2014). Distinguishing Self-Directed and Self-Regulated Learning and measuring them in the E-learning Context. Procedia - Social and Behavioral Sciences. 112; 190 – 198.

Case-Based Learning: (Integrated learning activity with Clinical Department)

- In this learning strategy a case is presented including a description of patients' problem that requires analysis and interpretation of data and decision-making by the learners. The learners' tasks are to critically analyze the relevance and usefulness of the data, interpret their meaning, and eventually propose a hypothesis. This form of teaching strategy is effective in stimulating critical thinking, problem solving, and other higher order cognitive skills.

Amin Z and Eng K H (2003). Case-Based Teaching. In: Basics in Medical Education. 1st Edition. World Scientific Publishing Co. Pte. Ltd. ISBN-13 978-981-238-209-2.

Student Support and Guidance

- Students' support and guidance are based on the provision of clear and timely academic assistance and individual tutorial support. Staff members at AFCM are present to students in fixed, announced office hours as personal tutors to offer general academic guidance and support.



- The students are also provided with Student Guide for each module. This indicates what they should learn and how this learning can be achieved and evaluated. Student guide provides students with learning outcomes, details of the program and guidance to support self-study and self-assessment.

Chapter 4: Learning Resources

Anatomy

1. Snell, clinical anatomy by regions, 9th Edition.
2. Web site: www.studentconsult.com

Biochemistry

Champe PC, Harvey RA, Ferrier DR. "Lippincott's Illustrated Reviews in Biochemistry" 6th edition.

Histology:

1. Junqueira L. and Carneiro J. Basic Histology, Text and Atlas. 13th Edition. Lange medical books/McGraw-Hill, 2018
2. Web site: www.najah.edu/nnu_portal/file/faculties/histology
3. Web site: www.visualhistology.com/

Physiology:

Ganong's Review of Medical Physiology, 25th edition.

<https://www.amazon.com/Ganongs-Review-Medical-Physiology-Twenty-Fifth/dp/007182510X>

Pharmacology:



1. Whalen K, Finkel R, Panavelil TA. Lippincott's Illustrated Reviews: Pharmacology, 7th edition. Philadelphia: Wolters Kluwer, 2018
2. Katzung BG, Trevor AJ. Basic & Clinical Pharmacology (14th edition) New York: McGraw-Hill Medical, 2018
3. Web sites: https://www.rxlist.com/drugs/alpha_a.htm
<https://www.accessdata.fda.gov/scripts/cder/daf/>

Pathology:

- Kumar V, Abbas AK, Aster J. Robbins Basic Pathology, 10th Edition, Philadelphia, 2017.
- Web site: <https://www.pathologyoutlines.com>

Public health:

1. Olsen J, Christensen K, Murray J, Ekbohm A. An Introduction to Epidemiology for Health Professionals. Springer New York, 2010.
2. Bonita R, Beaglehole R, Kjellström. T Basic Epidemiology: World Health Organization, 2nd Edition, 2002.

Microbiology & immunology

Levison's review of Medical Microbiology



Chapter 5: Module director and departments' coordinators

Dr. Nevine Bahaa	Module Director
Dr. Shereen Adel	Anatomy coordinator
Dr. Maggie Maher Ramzy	Biochemistry coordinator
Dr. Mona Raafat	Histology coordinator
Dr. Ghida Mohamed	Physiology coordinator
Dr. Noha Samir Abdel Latif	Pharmacology coordinator
Dr. Wesam Mohamed Othman	Pathology coordinator
Dr. Lamia Fouad Fathy	Microbiology& immunology coordinator
Dr. Mennat-Allah Saeed Hosny	Public health coordinator



Chapter 6: Module assesement

Musculo-skeletal & Integumentary System (MSI 110):

	Timing & Types	Method	Marks
60%	Mid Module Exam (Continuous assessment during the module).	MCQ, SAQ, SEQ	20 marks
	Structured student portfolio-Assignment	Rating scale & Holistic scoring rubric	20 marks
	End module examination	MCQ, SAQ, SEQ	40 marks
	End module practical examination	Objective Structured Practical Examination (OSPE)	40 marks
40%	End year written examination	MCQ, SAQ, SEQ	80 marks
	Total		200 marks



As compensation applies across assessment components in this module, a failure of the components will require a supplementary exam to be undertaken to progress with percentage marks distribution as follows:

%	Type	Method	Marks
70%	Written exam	MCQ SAQ (Short answer questions) SEQ (Short essay)	140
30%	Practical exam	Objective Structured Practical Examination (OSPE)	60
	Total		200




Module assessment Schedule

Exam		Date	
Musculo-skeletal & Integumentary System (MSI-110)	Musculo-skeletal & Integumentary System Mid Module Exam	5/7/2023	Written (MCQ, SAQ, SEQ)
	Musculo-skeletal & Integumentary System End Module Exam	29/7/2023	Written (MCQ, SAQ, SEQ)
		30/7/2023	OSPE



Chapter 7: Module Evaluation Forms

Pre-clerkship Phase Musculo-skeletal & Integumentary System Module Evaluation form	Edition No.00	Issue No.01	Code No.	
	Date of Edition /	Date of issue 11/2018	F-ME-1a.2F	Quality Assurance and Accreditation Department

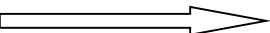
Module Evaluation

(To be filled in by each cadet at the end of each module)

Name of Cadet:				ID No.:	
Academic Year:	2018/2019	Module:		PBL Group:	

Thank you for taking the time to complete this evaluation form. Your feedback will help the college to continuously improve the educational program. Please complete and return the form to your group tutor.



	Totally agree  Totally disagree				
	5	4	3	2	1
1. The objectives of the Module were clear					
2. The Module Lecture notes and study guide were well organized and helpful					
3. The Module contents fitted in with the Module objectives					
4. The recommended resources/ lectures were useful					
5. The module assignments were linked well to the module contents					
6. The lectures were useful					
7. The First Aid / Basic Life Support skills training sessions were useful					
8. The skills lab training session were related to the Module contents					
9. The Presentation Skills training sessions were useful					




What did you like in this Module?

Provide suggestions for improvement

DOCUMENTED



Pre-clerkship Phase Cadets' Evaluation of the Student Guide form	Edition No.00	Issue No.01	Code No.	
	Date of edition /	Date of issue 11/2018	F-ME-1a.3F	Quality Assurance and Accreditation Department

Cadets' Evaluation of the Study Guide

Name of Cadet:		ID No.:	
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Dear Cadets: we appreciate your input about this study guide. This information is very useful in maintaining a high quality of education in our college. We will use your input in updating the Module student guide for the next academic year. Please fill this form at the end of the Module and submit it to your Module Coordinator.

1. How would you rate the Module study guide in helping cadets learning in the module?

Not very helpful

Helpful

Very helpful

2. Which part(s) of the Module study guide have you found most useful? (check all that apply)



General Module timetable

Learning opportunities

List of tutors in the Module

Learning objectives

Learning resources

Principles of assessment

3. Which part(s) of the Module study guide have you found least useful? (check all that apply)

General Module timetable

Learning opportunities

List & summary of the problems

List of tutors in the Module

Learning objectives

Learning resources

Principles of assessment



4. What modifications would you like to see addressed in this Study Guide?

Please provide any additional comments you wish to make about the Module Study Guide.

5. In your view was the Module well received by the cadets? Explain.